

REMARKS

Claims 14, 35, and 37 have been amended. Claims 13, 14, 18 – 33, and 35 – 37 are currently pending in the present application.

In the Office Action, claims 14, 19, 21, 22, and 35 – 37 were objected to. Furthermore, in the Office Action, claims 13, 14, and 19 were rejected under 35 USC §102(b) as being anticipated by US Patent No. 4,161,557 to Suzuki et al. (Suzuki et al '557). Also, claims 13, 14 and 19-22 were rejected under 35 USC §102(b) as being anticipated by US Patent No. 4,738,549 to Plimpton (Plimpton '549). Additionally, in the Office Action, claim 18 was rejected under 35 USC §103(a) as being unpatentable over Plimpton '549. Furthermore, claims 23 – 24 were rejected under 35 USC §103(a) as being unpatentable over Plimpton '549 in view of US Patent No. 6,385,869 to Mac Williams et al. (MacWilliams '869). Moreover, claims 25-28 were rejected under 35 USC §103(a) as being unpatentable over Plimpton '549 in view of GB Patent No. 2,318,870 to Hicken (Hicken GB '870). Further additionally, claims 29 – 30 were rejected under 35 USC §103(a) as being unpatentable over Plimpton '549 and Hicken GB '870 in view of MacWilliams '869. Also, claim 31 was rejected under 35 USC §103(a) as being unpatentable over Plimpton '549 and Hicken GB '870 in view of WO Patent No. 01/46661 to Marques et al. (Marques et al WO '661).

The Office Action indicates that claims 32 and 33 are allowed and that claims 35 – 37 would be allowable if rewritten to overcome the claims objections.

The Objection to Claims 14, 19, 21, 22, and 35 – 37

With respect to the objection to claims 14, 19, 21, 22, and 35 – 37, the Office Action indicates that claim 14 as amended added limitations considered as non-limiting. Claim 14 has now been amended to clarify its subject matter and it is thus submitted that claim 14 is now non-objectionable. Additionally, the Office Action indicates that the limitations of “one hemisphere” and “the other hemisphere” in claims 35 and 37 are

confusing. The Examiner noted that, for purposes of the present Office Action, these just-noted limitations were treated as a generic description such as portion or section. Claims 35 and 37 have now been amended to delete the expressions of “one hemisphere” and “the other hemisphere” and to substitute therefor a generic description as suggested in the form of the expressions “one portion” and “another portion” and it thus submitted that claims 35 and 37 are now non-objectable.

The Claimed Invention

An exemplary embodiment of the present invention as recited by, for example, independent claim 13 of the present application, is directed to a temperature-indicating element for a refrigeration device, having a backing. A thermochromic layer is applied to the backing for indicating a predetermined desired temperature. The thermochromic layer is enclosed between the backing and a transparent protective layer.

Another exemplary embodiment of the present invention as recited by, for example, independent claim 25 of the present application, is directed to a refrigeration device including a temperature-indicating element. The temperature-indicating element has a backing and a thermochromic layer is applied to the backing. The thermochromic layer has thermochromic pigment elements that change color at about +4° C for visually indicating a predetermined desired temperature. The thermochromic layer is enclosed between the backing and a transparent protective layer formed from a casting compound.

The Rejection Of Claims 13, 14, and 19 under 35 U.S.C. §102(b) As Being Anticipated By US Patent No. 4,161,557 to Suzuki et al

It is asserted in the Office Action that Suzuki et al '557 discloses a temperature-indicating element for a refrigeration device (column 5, lines 22 – 24), comprising: a backing (14); a thermochromic layer is applied to the backing for indicating a

predetermined desired temperature (12 and 14); and the thermochromic layer is enclosed between the backing and a transparent protective layer (16).

The Office Action asserts that the Suzuki et al '557 patent discloses a temperature-indicating element for a refrigeration device. However, a closer analysis of the disclosure of the Suzuki et al '557 patent reveals that this reference does not, in fact, teach or disclose the features of the temperature-indicating element for a refrigeration device as recited in claim 13 of the present application. In contrast to the temperature indicating element recited in Claim 13 of the present application, the Suzuki et al '557 reference discloses a complex structure for polyvinyl butyral-liquid crystal film forming compositions and films that change color according to the temperatures encountered. There, component liquid crystal compositions in the form of 2, 3 or 4 component liquid crystal compositions are employed for providing a desired color response, a meso-phase or color-play temperature range at a desired temperature level and having a suitable width of temperature range and/or desired glass transition temperature. Preferably, the liquid crystals are selected to provide a color response in the meso phase range changing with increasing temperature from red through orange, yellow, green and blue to violet in the visible spectrum as the results of the light reflections are scattering by the liquid crystals (see Col. 4, lines 2 – 9, of Suzuki et al '557). In contrast to the present invention, Suzuki et al '557 uses liquid crystals and neither teaches nor discloses the desirability of using thermochromic pigments as recited in independent claim 13 of the present application. Moreover, Suzuki et al '557 does not provide an indication that a particular temperature level has been achieved but instead provides an arrangement in which different ranges are provided for indication of a temperature in a particular range.

As further seen in the Suzuki et al '557 reference, compositions number 14 through 16 [from a table of compositions useful in the Suzuki et al '557 patent], are useful for, among other purposes, providing leak detection in refrigeration. However, such leak detection does not provide the temperature indication inside the refrigeration device as provided by the present invention. Suzuki et al '557 is directed to a chemical

formulation with no hint of use in a refrigeration setting and that hint is as outlined above, that a composition from a table of useful compositions in the Suzuki et al '557 is useful for leak detection in refrigeration. The Suzuki et al '557 reference provides no hint that its chemical formation can be used for a generalized temperature indicator in a refrigeration device such as a household refrigerator.

For these and other reasons, the subject matter recited by independent Claim 13 is not anticipated by Suzuki et al '557 under 35 USC §102(b). Therefore, Claim 13 is allowable. Claims 14 and 19 depend from Claim 13 and are allowable for the same reasons and also because they recite additional patentable subject matter.

The Rejection of Independent Claim 13 under 35 U.S.C. §102(b) As Being Anticipated By US Patent No. 4,738,549 to Plimpton and The Rejection of Independent Claim 25 under 35 U.S.C. §103(a) As Being Unpatentable Over US Patent No. 4,738,549 to Plimpton in view of GB Patent No. 2,318,870 to Hicken

It is asserted in the Office Action that Plimpton '549 discloses a temperature-indicating element for a refrigeration device having the features recited in claim 13 of the present application. Additionally, it is asserted in the Office Action that Plimpton '549 (in combination with Hicken GB '870) discloses a refrigeration device having the features recited in claim 25 of the present application. However, as will now be demonstrated, it is submitted that Plimpton '549, either alone or in combination with any of the secondary references, does not teach or disclose the present invention including the aspects thereof directed to the temperature-indicating element for a refrigeration device recited in claim 13 of the present application or the refrigeration device recited in claim 25 of the present application.

Plimpton '549 discloses a thermometer for immersion in a swimming pool. Plimpton '549 discloses the use of liquid crystals to provide a temperature indication within a certain range, unlike the arrangement of the present invention that utilizes

thermochromic pigments specifically chosen for the ability to change color at +4° C. Plimpton '549 provides liquid crystal agents that are operable from about 15° F to about 160° F (see Col. 2, lines 18 – 20, of Plimpton '549). The Plimpton '549 device includes a liquid crystal display that indicates temperature over a desired range (see Column 3, line 7 – 10, of Plimpton '549). Accordingly, the Plimpton '549 device does not provide an indication that a specific temperature has been achieved or is lower by using a visual perceptible symbol that is present when the temperature is +4° C and absent when the temperature is lower than +4° C.

Furthermore, the Plimpton '549 apparatus lacks all of the features recited in claim 13 of the present application. There is no backing such that the pool thermometer could be useful in a refrigerator. As noted, the present invention provides, in one aspect thereof, that an adhesive backing structure may be provided to permit placement of the thermometer wherever desired. However, according to Plimpton '549, a bore 45 through the casing 14 will allow attachment of a cord or the like so the thermometer may be hung from the side of a pool or hot tub to be drawn upward for temperature readings and then replaced into the water (Col. 4, lines 25 – 30). The Plimpton '549 reference thus provides, at most, a teaching that a pool thermometer can be secured via a tether cord and a user can draw up the pool thermometer via the tether cord to observe a temperature reading and this is not a teaching that would lead one of skill in the art to provide a temperature-indicating device in a refrigerator having the features as recited in claim 13 of the present application.

For these and other reasons, the subject matter recited by independent Claim 13 is not anticipated by Plimpton '549 under 35 USC §102(b). Therefore, Claim 13 is allowable. Claims 14 and 18 – 22 depend from Claim 13 and are allowable for the same reasons and also because they recite additional patentable subject matter.

Moreover, with regard to the secondary references of MacWilliams '869, Hicken GB '870, or Marquest et al WO '661 that are combined with Plimpton '549 to reject independent claim 25 and claims 26 – 31 depending therefrom, it is submitted that none of these references overcome the deficiencies of Plimpton '549. For these and

other reasons, Plimpton '549, either alone or in combination, does not render obvious the subject matter defined by independent Claim 25. Therefore, Claim 25 is allowable. Claims 26 – 31 depend from Claim 25 and are allowable for the same reasons and also because they recite additional patentable subject matter.

CONCLUSION

In view of the above, entry of the present Amendment and allowance of Claims 13, 14, 18 – 31, and 35 – 37, in addition to the indicated allowance of claims 32 and 33, are respectfully requested. If the Examiner has any questions regarding this amendment, the Examiner is requested to contact the undersigned. If an extension of time for this paper is required, petition for extension is herewith made.

Respectfully submitted,

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